

REMARKS

Claims 1-54 are pending, with claims 1, 10, 19, 27, 33, 34, 36, 41, 45 and 50 being independent. Claims 20-21, 28-29, 34-35, and 39-44 have been cancelled without prejudice. Claims 19 and 27 have been amended. No new matter has been added. Reconsideration and allowance of the above-referenced application are requested.

Pixel Prioritization:

Claims 19, 24-27 and 32 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Stamer et al. (US 4,727,235). Claims 20 and 28 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Stamer in view of Nakano et al (US 4,734,558). Claims 23 and 31 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Stamer in view of Hasebe et al. (US 5,734,412). Claims 21-22 and 29-30 stand objected to, but would be allowable if rewritten in independent form. Independent claims 19 and 27 have been amended to include the patentable subject matter of cancelled claims 21 and 29. Thus, all of claims 19, 22-27, and 30-32 are now in condition for allowance.

Data Set Correction:

Claims 1-3, 5-12, 33, and 36 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Hasebe et al. (US 5,734,412) in view of Wiler et al. (US 5,478,426). Claims 4, 13-18, and 37-38 stand rejected under 35 USC 103(a) as allegedly being unpatentable over

Hasebe in view of Wiler, as applied to Claims 1 and 10 and further in view of Stamer et al.

These contentions are respectfully traversed.

Hasebe discloses a scan type laser marking device that adjusts scan speed by adjusting coordinate data. *See* Hasebe et al. at Abstract; col. 12, lines 19-30; and Figs. 10 & 11A-11C. But Hasebe's coordinate data does not indicate positions that pixels will occupy because the coordinate data output always stays ahead of the laser marking. *See* Hasebe et al. at col. 10, lines 28-43. The Office Action responds to this argument by stating, "Hasebe teaches in Fig. 10 the positions that the pixels would occupy within the x-y coordinates when the laser beam scans the surface of the product, and the x-coordinates of the above-mentioned pixels with respect to time (Fig. 11A)." *See* Office Action mailed Feb. 16, 2006 at page 13; emphasis added.

However, these figures in Hasebe represent laser scans, not pixel positions: "as shown in FIG. 10, the surface of the object 181 which is moved in the direction of the X-axis at a constant speed is scanned as indicated at (1), (2), (3) and (4) in the stated order, the coordinate data Ax changes in the direction of X-axis as shown in FIG. 11A." *See* Hasebe at col. 12, lines 19-23. The reference numerals "(1), (2), (3) and (4)" identify scan operations, not pixel positions. Furthermore, the coordinate data does not correspond to pixel positions because the coordinate data represents control points for the scanning laser, not pixel points where the laser burns a pixel:

The data outputting speed of the GDC 104 is such that, for instance in the case of describing one straight line, one coordinate data outputting time is 0.2 μ s. That is, the data outputting speed of the GDC 104 is much higher than the operating speed

(5.0 μ s or more per coordinate point) of an X-axis scanner or a Y-axis scanner (described later).

See Hasebe at col. 10, lines 37-43. Thus, the laser scanner is fed new coordinate data faster than the laser can move to each respective coordinate. Hasebe's coordinate data represents directional control points for the laser scanner, not pixel points at which the laser actually arrives. Thus, Hasebe does not disclose generating a corrected data set indicating positions that pixels would occupy if each pixel was moved at a velocity of the product until the pixel was printed, as recited in independent claims 1, 10, 33 and 36.

Furthermore, the Office Action acknowledges that Hasebe fails to teach, "continuously directing a printing beam to a plurality of locations on a material [...] without de-activating the printing beam, [...] a dwell time at each location being longer than a dwell time on areas of the material traveled by the printing beam between consecutive locations", and relies on Wiler for this feature. However, Wiler fails to cure this deficiency of Hasebe.

Wiler describes a method and apparatus for ablating selected surfaces of an elastomeric product, such as a tire. See Wiler at Abstract. The microprocessor 52 in Wiler's ablation system 40 provides the ability to control "the dwell time of the laser beam upon the work piece 44[.]" See Wiler at col. 7, lines 11-14. However, all this means is that the dwell time for a given scan of the work piece can be varied. "Additionally, by controlling the dwell time or rate of scan of the laser beam 14 upon the work piece 20, various depths of ablation may be attained." See Wiler at col. 6, lines 9-11; emphasis added. Wiler does not describe varying dwell time during the course of a scan operation, and thus Wiler does not describe the claimed "continuously directing a printing beam to a plurality of locations on a material [...] without de-activating the

printing beam, [...] a dwell time at each location being longer than a dwell time on areas of the material traveled by the printing beam between consecutive locations" (emphasis added), as recited in independent claim 1. Similar reasoning applies to independent claims 10, 33 and 36 as well.

For the above reasons, independent claims 1, 10, 33 and 36 are in condition for allowance. Dependent claims 2-9, 11-18 and 37-38 are patentable for at least the above reasons, and based on their own merits. For example, a prima facie case of obviousness has not been established for these claims because a proper motivation to combined the references has not been identified, and there is not a reasonable chance of success for the proposed combination. Stamer is directed to equalizing power output in a laser marking system (with multiple lasers and lens that form a vertical column of beams that mark vertical pixel elements of dot matrix characters in parallel) by increasing the on time of weaker output lasers relative to the more powerful lasers. See Stamer et al. at Abstract and col. 2, line 52 to col. 3, line 37. Hasbe uses a single scan-type marking laser, and thus has no need for the multiple lasers and output power equalization techniques of Stamer. Thus, one skilled in the art would have no motivation to combine Stamer with Hasebe and Wiler, as suggested, and there is not a reasonable chance of success for this proposed combination. Previously presented arguments regarding the improper combination of Stamer with Hasebe have not been addressed in the Office Action mailed Feb. 16, 2006.

Density Change:

Claims 34-35, 39, and 41-43 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Stamer in view of Loewenthal et al. (US 5,294,942). Claims 40 and 44 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Stamer in view of Loewenthal and further in view of Nakano. These contentions have been obviated by the cancellation of claims 34-35 and 39-44 without prejudice.

Adjustable Dwell Time:

Claims 45-47 and 50-52 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Cameron et al. (US 5,767,483) in view of Wiler. Claims 48-49 and 53-54 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Cameron in view of Wiler and further in view of Sato (US 6,681,055). These contentions are respectfully traversed.

The Office Action acknowledges that Cameron fails to teach, “wherein the electronics are configured to accept input that governs time spent by the printing beam dwelling at the locations to alter the optical characteristic”, and relies on Wiler for this feature. However, as addressed above, Wiler describes receiving input to adjust a dwell time of a given scan (i.e., a controllable rate of scan). Wiler does not describe receiving input that governs time spent by the printing beam dwelling at the locations to alter the optical characteristic. Similar reasoning applies to claim 50, which recites, “adjusting a dwell time of the laser beam on the material during said directing [the laser beam to a plurality of locations] [...]; wherein said adjusting is based on user input dwell time information corresponding to the material.” Wiler neither teaches nor suggests

the use of user input to adjust a dwell time of a laser beam during the directing of the laser beam to a plurality of locations on a material. Thus, independent claims 45 and 50 should be allowable.

Furthermore, the suggested combination of Wiler with Cameron is improper. Cameron is directed to forming a normally invisible (to the naked eye) sub-surface mark in a material, such as glass, by forming localized stress patterns using carefully controlled variations in laser power or velocity. *See* Cameron et al. at Abstract and col. 7, line 36 to col. 8, line 26. Wiler describes a method and apparatus for ablating selected surfaces of an elastomeric product, such as a tire. *See* Wiler at Abstract. The purpose of the controllable rate of scan in Wiler is to enable attainment of various depths of ablation in the elastomeric product. *See* Wiler at col. 6, lines 7-26. Since Cameron does not describe laser ablation, one skilled in the art would not have thought to combine the controlled elastomeric ablation depth techniques of Wiler with Cameron's forming of localized stress patterns in glass. Thus, the Office Action's suggested motivation to combine Wiler with Cameron cannot be supported.

For all of the above reasons, a *prima facie* case of obviousness has not been established, and independent claims 45 and 50 are in condition for allowance. Dependent claims 46-49 and 51-54 are patentable for at least the above reasons, and based on their own merits. For example, claims 46-47 and 51-52 are patentable because the techniques described in Cameron indicate that the laser beam is de-activated in the course of forming the symbols. *See* Cameron et al. at Figs. 4 & 5, and col. 7, line 24 to col. 8, line 26.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific issue or comment does not signify agreement with or concession of that issue or comment. Because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.


It is respectfully suggested for all of these reasons, that the current rejection is totally overcome; that none of the cited art teaches or suggests the features which are now claimed, and therefore that all of these claims are in condition for allowance. A formal notice of allowance is thus requested.

Please apply the two-month Extension of Time fee, and any other necessary charges or credits, to deposit account 06-1050.

Respectfully submitted,

Date:

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